

***Listing of the Claims***

This listing of claims will replace all prior versions, and listings of claims in the application.

1 - 140. (Canceled)

141. (New) A nucleic acid ladder comprising a plurality of double stranded nucleic acid fragments, each fragment having a size in base pairs, a copy number, a mass, and a relative mass wherein the mass of each fragment is the size in base pairs of the fragment multiplied by the copy number of the fragment, wherein the relative mass of each fragment is the mass of the fragment divided by the sum of the masses of all of the fragments, wherein the relative mass of the fragments of the plurality are substantially equal, wherein the plurality comprises at least two fragments having a size greater than 1 kb, and wherein the plurality comprises at least two fragments having a size less than 1 kb.

142. (New) The nucleic acid ladder of claim 141, wherein the mass of each fragment of the plurality is from 4kb to 500bp.

143. (New) The nucleic acid ladder of claim 141, wherein the mass of each fragment of the plurality is from 5kb to 400bp.

144. (New) The nucleic acid ladder of claim 141, wherein the mass of each fragment of the plurality is from 5kb to 300bp.

145. (New) The nucleic acid ladder of claim 141, wherein the mass of each fragment of the plurality is from 5kb to 200bp.

146. (New) The nucleic acid ladder of claim 141, wherein the mass of each fragment of the plurality is from 5kb to 100bp.

147. (New) The nucleic acid ladder of claim 141, wherein the mass of each fragment of the plurality is from 10kb to 400bp.

148. (New) The nucleic acid ladder of claim 141, wherein the mass of each fragment of the plurality is from 8kb to 400bp.

149. (New) The nucleic acid ladder of claim 141, wherein the mass of each fragment of the plurality is from 6kb to 400bp.

150. (New) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 3 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 3 fragments having a size less than 1 kb.

151. (New) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 3 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 4 fragments having a size less than 1 kb.

152. (New) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 3 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 5 fragments having a size less than 1 kb.

153. (New) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 4 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 3 fragments having a size less than 1 kb.

154. (New) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 5 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 3 fragments having a size less than 1 kb.

155. (New) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 4 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 4 fragments having a size less than 1 kb.

156. (New) The nucleic acid ladder of claim 141, wherein the plurality comprises at least 5 fragments having a size greater than 1 kb, and wherein the plurality comprises at least 5 fragments having a size less than 1 kb.

157. (New) The nucleic acid ladder of claim 141, wherein the plurality of double stranded nucleic acid fragments are stained with a detectable label.

158. (New) The nucleic acid ladder of claim 157, wherein the detectable label is SYBR green.

159. (New) The nucleic acid ladder of claim 157, wherein the detectable label is ethidium bromide.

160. (New) The nucleic acid ladder of claim 141, further comprising a dye.

161. (New) The nucleic acid ladder of claim 141, wherein the copy number of each fragment of the plurality is such that the mass of each fragment is no more than 3 times the mass of any other fragment of the plurality.

162. (New) The nucleic acid ladder of claim 141, wherein the copy number of each fragment of the plurality is such that the mass of each fragment is no more than 2.5 times the mass of any other fragment of the plurality.

163. (New) The nucleic acid ladder of claim 141, wherein the copy number of each fragment of the plurality is such that the mass of each fragment is no more than 2 times the mass of any other fragment of the plurality.

164. (New) The nucleic acid ladder of claim 141, wherein the copy number of each fragment of the plurality is such that the mass of each fragment is no more than 1.5 times the mass of any other fragment of the plurality.